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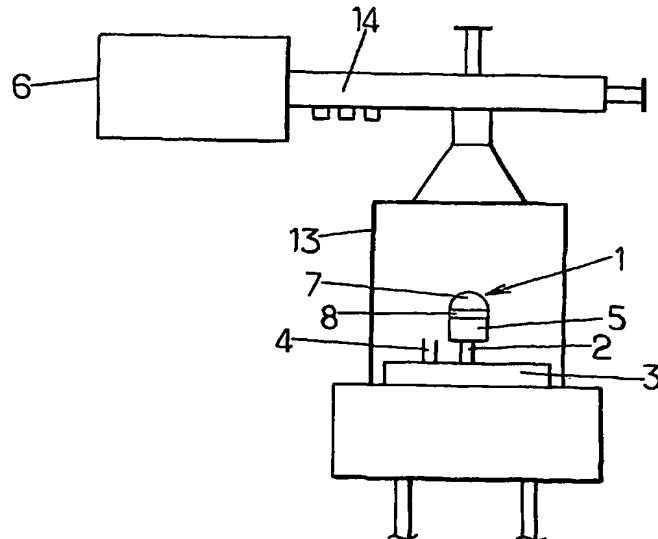
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(54) Title: HIGH-SPEED DIAMOND GROWTH USING A MICROWAVE PLASMA IN PULSED MODE



(57) Abstract: Method for manufacturing a diamond film of electronic quality at a high rate using a pulsed microwave plasma, in which, in a vacuum chamber, a plasma of finite volume is formed near a substrate by subjecting a gas containing at least hydrogen and carbon to a pulsed discharge, which has a succession of low-power states and of high-power states, and having a peak absorbed power P_c , so as to obtain at least carbon-containing radicals in the plasma and to deposit the said carbon-containing radicals on the substrate in order to form a diamond film thereon. Power is injected into the volume of the plasma with a peak power density of at least 100 W/cm^3 , while maintaining the substrate to a substrate temperature of between 700°C and 1000°C .

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